REMARKS

Status of the claims

Claims 23-47 are cancelled and, upon entry of this response, new claims 48-68 will be pending. The latter claims find support in the original claims and throughout the specification. For instance, the nucleic acid sequence set forth in SEQ ID NO: 10 (SBE II-D1) was identified using a probe, SBE-9 (see page 36 of the application, Example 13). SBE II-D1 encodes a translation product having 768 amino acids (SEQ ID NO: 12), as the application describes on page 83. The protein set forth in SEQ ID NO. 12 is the "variant" that the application teaches, on page 4 at lines 20 to 25, is different from the protein of Nair *et al.*

Rejections under 35 U.S.C. § 101 and § 112

Claims 30-31 stand rejected under 35 U.S.C. §101 for alleged lack of either a credible asserted utility or a well established utility. Applicants respectfully traverse.

In the Office Action dated October 24, 2002, Examiner Baum asserts that the specification only discloses the specific sequence of SEQ ID NO. 10. Moreover, the examiner contends that applicants' functional characterization of SEQ ID NO. 10, as a starch branching enzyme II (SBE II), is based only on sequence similarity to other SBE II sequences. Applicants submit, however, that SEQ ID NO. 10 shares homology to other SBE II sequences *and* encodes a translation product (SEQ ID NO. 12) with characterized SBE II activity. The examiner is directed to commentary from Example 14, at page 37 of the specification:

> Sequencing of the SBE II gene contained in clone 2, termed SBE II-D1 (see SEQ ID NO: 10), showed that it coded for the N-terminal sequence of the major isoform of SBE II expressed in the wheat endosperm, as identified by Morrell et al (1997). This is show in Figure 13.

Thus, Example 14 indicates that the translation product of SEQ ID NO. 10 is the same protein reported by Morell *et al* (1997). As described in their publication, Morell and

colleagues identified the protein after purifying it on the basis of its having starch branching enzyme activity. See pages 202-203 and Table II on page 205. In other words, the knowledgeable reader of the present specification is informed that the translation product of SEQ ID NO. 10 has defined SBE II activity. Applicants therefore request reconsideration and withdrawal of the rejections.

Claims 23-27 and 30-31 are rejected under 35 U.S.C. § 112, first paragraph, for alleged lack of written description. The examiner asserts "Applicants do not identify structural features unique to the starch branching enzyme II protein, the functional domains of the protein nor the overall function of the protein." Applicants respectfully traverse.

Applicants submit that the specification clearly identifies structural and functional domains that are unique to the SBE II protein encoded by SEQ ID NO: 10. The examiner is directed to Table 2, page 38, which identifies several SBE II-D1 structural and functional domains. Additionally, the specification discloses the "overall function" of SBE II. As noted on page 3, at lines 22-27, SBE II is involved in the production of glucose alpha-1,6 branches characteristic of amylopectin. In view of the structural and functional domains identified in the translation product of SEQ ID NO: 10, applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 23-27 and 30-21 are rejected under 35 U.S.C. 112, first paragraph, for alleged lack of enablement. Applicants respectfully traverse.

For the reasons advanced above, applicants submit that claimed subject matter is supported by an enabling disclosure. Specifically, the translation product encoded by SEQ ID NO: 10 was identified based on its having SBE II activity. Moreover, the translation product has several structural and functional domains characteristic of SBE II proteins.

Therefore, the specification provides full disclosure to guide a person skilled in the relevant art to make and use the present invention. For this reason, applicants respectfully request reconsideration and withdrawal of the rejection.

Rejections under 35 U.S.C. § 102 and .§ 103

Claims 23-25 and 30-31 are rejected over Fisher *et al*, *Plant Physiol.* 102: 1045, 1046 (1993) (including Accession L08065, NCBI Database, 1994) and Chibbar *et al*, PROCEEDINGS OF THE INTERNATIONAL WHEAT QUALITY CONFERENCE, Manhattan, Kansas, 18-22 May 1997, at pages 249-260. Applicants respectfully traverse.

Present claims 48-63 are drawn to a nucleic acid molecule encoding a translation product having starch branching enzyme activity and having 768 amino acids. Neither Fisher *et al.* nor Chibbar *et al.* teaches a SBE II protein having 768 amino acids. Moreover, there are no principles evident in the art of record that would have allowed the skilled artisan somehow to generalize to the claimed invention from the amino-acid structures allegedly taught by Fisher and Chibbar, respectively. Accordingly, there is no reasonable basis for contending lack of novelty or obviousness in light of the cited publications, read alone or together, respectively. Applicants therefore respectfully request reconsideration and withdrawal of the subject rejections.

Applicants believe that the present application now is in condition for allowance. Favorable reconsideration is respectfully requested. Also, the examiner is invited to contact the undersigned if it is felt that some issue requires further consideration.

Respectfully submitted,

Date 24 April 2003 By S. A. Bent

FOLEY & LARDNER
Washington Harbour
3000 K Street, N.W., Suite 500
Washington, D.C. 20007-5143
Telephone: (202) 672-5404
Facsimile: (202) 672-5399

Stephen A. Bent
Attorney for Applicant
Registration No. 29,768

ABSTRACT

The present invention relates to a nucleic acid sequence encoding an enzyme of the starch biosynthetic pathway in a cereal plant, wherein the enzyme is selected from the group consisting of starch branching enzyme I, starch branching enzyme II, starch soluble synthase I, and debranching enzyme, with the provisio that the enzyme is not soluble starch synthase I of rice, or starch branching enzyme I of rice or maize.

applicant's copy

#6

Sheet 1 of 1

Form PTO-1449 (MODIFIED)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 054270/0126	SERIAL NO. 09/508,377
		APPLICANT Zhongyi LI, et al.	
		FILING DATE 6/09/2000	GROUP ART UNIT Unassigned

OIPE APR 24 2003 PATENT & TRADEMARK OFFICE

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

OIPE JUL 14 2000 PATENT & TRADEMARK OFFICE JC99

RECEIVED JUL 31 2000 TECH CENTER 1600/2900

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION YES	TRANSLATION NO
B	A1	19028/95	10/17/95	Australia				
	~~A2~~	~~48747/97~~	~~5/14/98~~	~~Australia~~				
B	A3	97/04113	2/6/97	WIPO				
B	A4	65392/94	11/8/94	Australia				
	~~A5~~	~~77165/95~~	~~6/5/97~~	~~Australia~~				

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

B	A6	Ramesh B. Nair et al., "Isolation, characterization and expression analysis of a starch branching enzyme II cDNA from wheat[1].", Plant Science, vol. 122, pp. 153-163, 1997

EXAMINER	DATE CONSIDERED
	10/2/02

* **EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include any copy of this form with next communication to applicant.**

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU 98/00743

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
WO	9704113	AU	66146/96	EP	839203		
AU	94/65392	CA	2160159	EP	693128	GB	2291878
		NZ	265061	WO	9424292		
AU	95/77165	WO	97/20040	EP	863983	NO	982443
		SE	9601506	SE	9504272		
AU	95/19028	WO	9526407	EP	754235	CA	2186399
AU	97/48747	WO	9820145	GB	2320716		
GB	9307408	AU	65392/94	CA	2160159	EP	693128
		GB	2291878	NZ	265061	WO	9424292
SE	9504272	AU	77165/96	EP	863983	NO	982443
		SE	9601506	WO	9720040		
GB	9406022	AU	19028/95	CA	2186399	EP	754235
		WO	9526407				
GB	9623095	AU	48747/97	GB	2320716	WO	9820145

END OF ANNEX